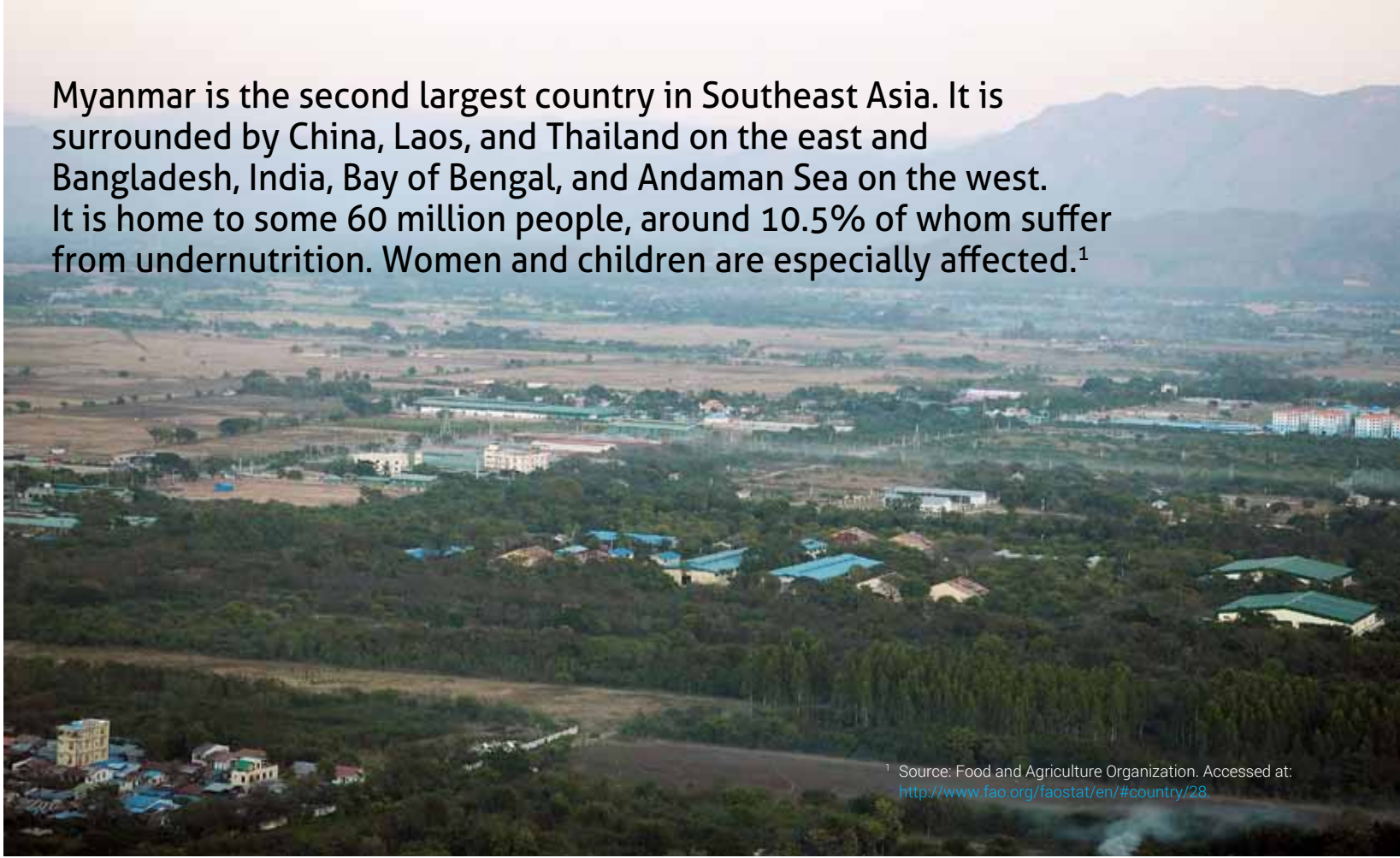
Nutrition Co-Benefits of Climate-Smart Agriculture

in Myanmar



Myanmar is the second largest country in Southeast Asia. It is surrounded by China, Laos, and Thailand on the east and Bangladesh, India, Bay of Bengal, and Andaman Sea on the west. It is home to some 60 million people, around 10.5% of whom suffer from undernutrition. Women and children are especially affected.[1]

[1] Source: Food and Agriculture Organization. Accessed at: http://www.fao.org/faostat/en/#country/28.

Myanmar is an emerging economy with a GDP growth rate of 6.6%. International tourist arrival and foreign direct investment inflows have accelerated in recent years. Higher investment flowed from Asian investors, mostly for transport, communications, and manufacturing.

Myanmar is, however, an agricultural country and the agriculture sector is a backbone of the economy, contributing 37.8% to the GDP.

Myanmar has made significant progress in addressing poverty, improving food security, and reducing malnutrition. However, significant challenges remain.

29.2% of children under 5 years old are stunted (low-height-for-age) and 7% are wasted (low-weight-for-height). Given the irreversible damages childhood malnutrition brings to the mental and physical growth of children, these could imply poor productivity of the future workforce of Myanmar.[1]

[1] Source: Food and Agriculture Organization. Accessed at: http://www.fao.org/faostat/en/#country/28.

Furthermore, almost half (46.3%) of women of reproductive age (15-49 years old) suffer from anemia.[2] Iron deficiency anemia causes fatigue, decreased motor abilities, and poor memory among affected women. It also risks infants of anemic pregnant women to inborn defects to the brain, spine or spinal cord (neural tube defects) and death.[3]

[2] Mawani, et al. Reproductive System & Sexual Disorders. 2016, Vol. 5. Issue 3.
[3] Brazier, A. and Saw Eden. (2015). Learning about nutrition. LEARN.

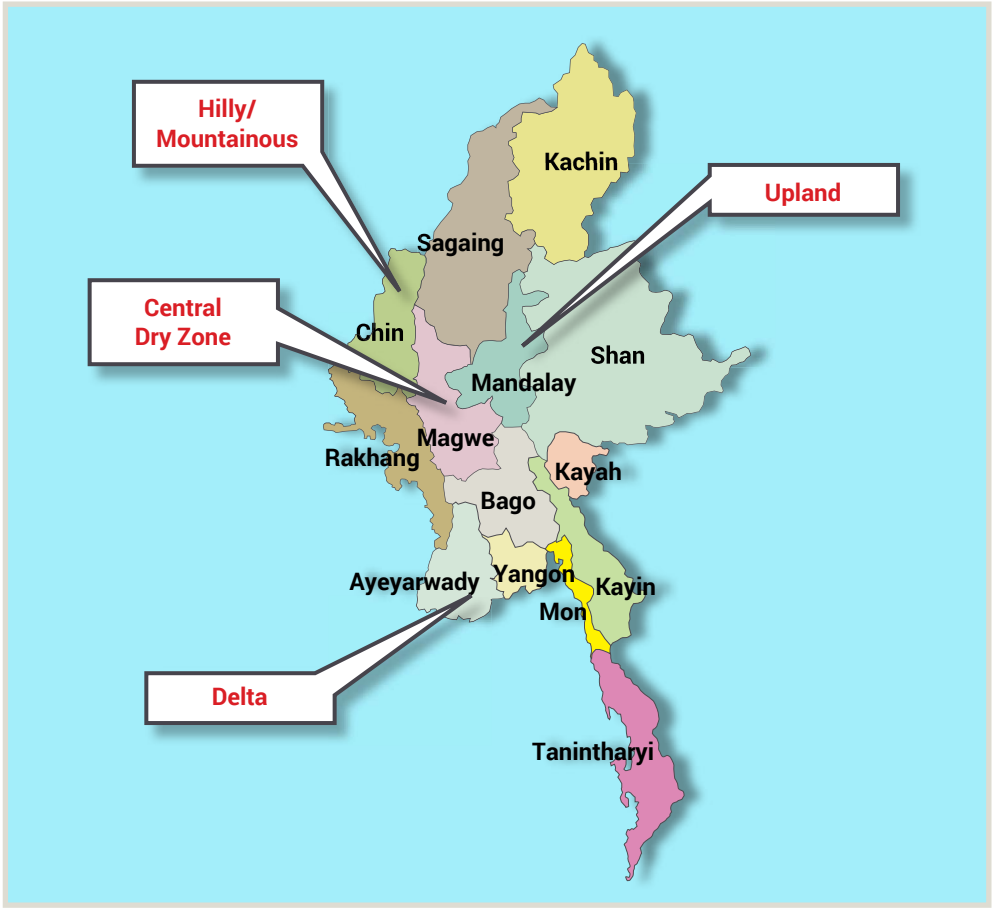
Fortunately, these concerns have already been recognized by government and non-government organizations. Various programs are being implemented to help improve the nutrition status of at-risk groups. These include the promotion of exclusive breast feeding, provision of cash/fresh food vouchers to poor families, dietary supplementation with specially-formulated foods, and fortification of staple foods.

Nutrition-sensitive interventions are done to help improve the access and utilization of families to food, health, and income. Among these are support services for improved agricultural production, introduction of new crop varieties that could better tolerate the agri-climatic conditions in respective areas, nutrition education, water, sanitation, and hygiene (WASH) programs, and relevant health interventions.

Food safety is another important area of work: It covers processes such as food handling and storing, food preparations, and use. Myanmar ranks 71st for food quality and safety among 113 countries (Global Food Security Index, 2017). Climate change, climate variability, and higher carbon dioxide (GHG) levels can increase food-borne illnesses and affect nutritional quality.

Poor nutrition continues to adversely impact health and well-being, therefore increasing the interest of development agencies. In addition, the climate change further burdens families challenged by undernutrition: in fact, resilience to climate change is reduced. With largely agriculture-based households, rainfall variability affects crop production and product quality as well.

In 2018, the International Institute of Rural Reconstruction (IIRR), with support from IDRC and CGIAR global research program on climate change, agriculture and food security (CCAFS) and its local NGO partners, conducted baseline studies in four villages in different agroecological zones in Myanmar in order to identify entry points for community development. These villages are Htee Pu (low land dryzone), Saktha (plateau), Masein (delta), and NyaungShwe (hilly areas).



Baseline survey results show that households consume moderately diverse diets in four villages – the mean Household Dietary Diversity Score (HDDS) is around 4.98 to 6.85 out of a perfect score of 12, with Saktha having the lowest HDDS among all villages (Table 1). Across sites, the consumption of fruits, white roots and tubers, and animal-sourced foods (meat, egg, dairy) are less common. Vitamin A-rich vegetables and legumes/pulses are also not usually consumed regularly, except in Saktha and Htee Pu (Table 2).

Table 1. Average household diet diversity per climate-smart village.

Climate-smart village	Mean household diet diversity
Htee Pu	6.5
Sakta	4.98
Masein	6.85
Nyaung Shwe	6.01

Note: Maximum 12 points

Table 2. Less commonly consumed food groups per village.

Climate-smart village	Less commonly consumed food groups
Htee Pu	Fruits, white roots & tubers, meats & eggs, milk & dairy, Vitamin A & vegetables
Sakta	Fruits, white roots & tubers, meats, milk, pulses; fish & seafood, sweets
Masein	Fruits, white roots & tubers, meats & egg, milk & dairy, legumes & pulses; Vitamin A & vegetables
Nyaung Shwe	Fruits, white roots & tubers, flesh meat, milk & dairy, legumes & pulses, vegetables (other than Vit. A rich) fish & seafood, sweets

Food culture in Myanmar is often shaped by ethnicity and cultural backgrounds. This has resulted in a rich range of food choices, which already feature dietary diversity.

Cultural rituals and events have helped Myanmar's communities retain some of its rich agro-biodiversity, e.g. fox tail millet for food and alcohol, Mithun livestock for weddings, etc.

Similar to the villagers in the project sites, 65% of the Myanmar population live in the remote rural areas. Source of income is not easy. In the sites, the top forms of livelihood are domestic work, farming, livestock rearing, and casual labor (Figure 1).

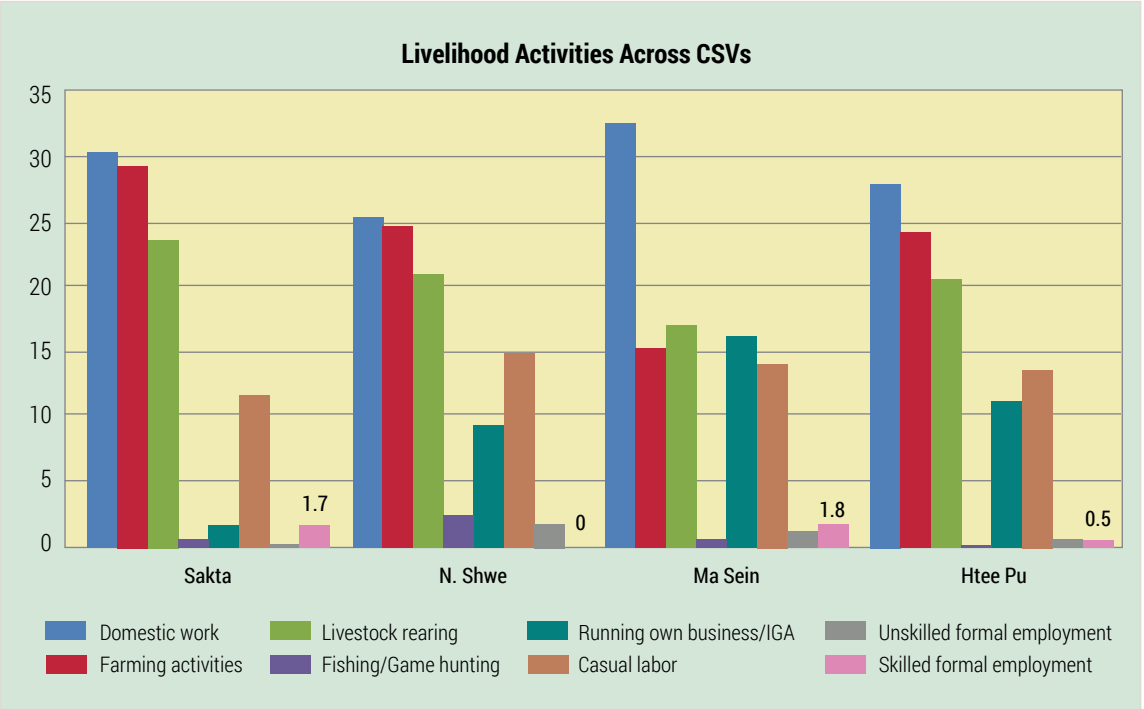


Figure 1. Common livelihood activities in climate smart villages.

Agricultural production is usually limited to certain crops or livestock (which could be a factor resulting to poor diet quality). Yield is further affected by climate change. As shown in initial survey results, farming families in the four CSVs do experience changes in climate, which affect their living conditions. Increase in daytime temperature is the most commonly experienced change across CSVs. All CSVs also experience early onset or delays of rainfall. All CSVs, except in Htee Pu, experienced "too much rainfall" (Figure 2).

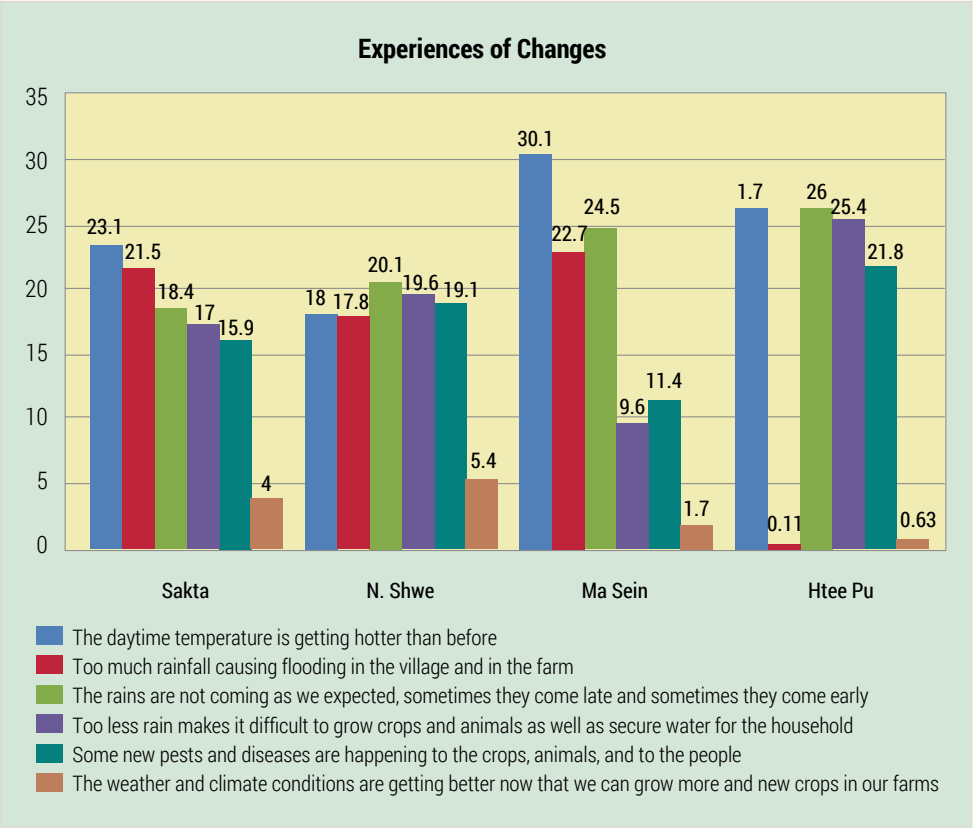


Figure 2. Changes in climate experienced in CSVs.

With limited livelihood and food options and the advent of climate change, families are indeed at increased risk of easily losing their source of food and income when extreme weather conditions occur. This highlights the relevance of enhancing the links of agriculture with nutrition while also building their resilience to the effects of climate change.

IIRR, together with IDRC, CGIAR, and its local NGO partners, are now working with the four villages using community-based adaptation approach to derive solutions that work and are scalable. These Climate-Smart Villages (CSVs) are platforms for testing and developing technical, social, and institutional adaptation innovation.

Climate-smart agriculture (CSA) practices are also potentially nutrition- smart if complemented with proper nutrition education. CSA methods feature both diversification and intensification of crops possible for smallholder farmers typically found in Myanmar.

By including legumes with roots and tubers, cereal-based food/farming systems can be nutritionally-enriched. Strengthening of livestock and fish components can also deliver nutrition goals. Small livestock production has a direct impact on family nutritional uptake while also modestly increasing incomes as well.

Increasing the diversity of agriculture activities may improve the intake of a variety of foods. Homestead gardening is an opportunity, given the usually the large land area found in homesteads in Myanmar.

Diversification of livelihood engagements also helps diversify sources of income thus enhancing adaptive capacities. Diversification reduces vulnerabilities from crop failure/loss.

Community-based adaptation approaches build on indigenous knowledge thus promoting active participation of villagers enhancing sustainability and building a sense of ownership of beneficiaries.

By promoting agro-forestry based on fruit trees and shrubs of green leafy vegetables, CSA can support nutritional objectives as well as income enhancement.

It is now increasingly recognized that access to clean, safe drinking water, sanitation and hygiene (WASH) can have positive impact on nutrition. In fact, proper sanitation and clean water can also (along with better balanced foods) reduce stunting and undernutrition. This is the result of reduced parasites and diarrheal diseases.

Nutrition-sensitive adaptation and mitigation measures should therefore characterize CSA efforts. CSA programs create new spaces for better nutrition in Myanmar. A food system orientation can be facilitated through diversification and intensification of farming systems.

Community level nutrition education proposed key messages

1. Eat a variety of foods; different types of food have different roles for the body – for energy, growth and development, and protection from sickness/infection.
2. Planting different types of crops in the home garden makes a variety of food available for the family.
3. Tubers and roots are alternative sources of energy like cereals.
4. Legumes, beans and pulses are alternative affordable source of protein
5. Dark green leafy vegetables (or small fish with bones) are high in calcium
6. Orange and dark green leafy vegetables are high in vitamin A.
7. Fruits and vegetables contain vitamins and minerals that protect the body from sickness/ infection.
8. Iron from meats, legumes and dark green leafy vegetables help in muscle and brain development
   - Iron from plant foods are better used by the body when eaten with animal source foods (especially nyaung shwe, htee pu)
   - It is good to eat vitamin C rich foods with plants rich in iron for better absorption (especially nyaung shwe, htee pu)
9. Using clean safe water (washing food, cooking and drinking) is as important as choosing healthy food.

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